1. An automated method for calculating the transit time of a pulsed signal transmitted from a first ultrasonic transducer to a second ultrasonic transducer, the method comprising:

measuring the amplitude of the pulsed signal received at the second transducer from the first transducer;

measuring the amplitude of any noise proximate to the received pulsed signal;

calculating the signal to noise ratio of the received pulsed signal and the noise, respectively;

if the signal to noise ratio is above a predetermined threshold, automatically implementing a first technique for calculating the transit time of the received pulsed signal; and

if the signal to noise ratio is less than the predetermined threshold, automatically implementing a second different technique for calculating the transit time of the received pulsed signal.

2. The method of claim 1 in which the first technique includes a cross correlation technique.

3. The method of claim 1 in which the second technique includes an integrated threshold technique.

4. The method of claim 1 in which the predetermined threshold is approximately between 7 and 13.

5. The method of claim 1 in which the first transducer and the second transducer are on the same side of a conduit.

6. The method of claim 1 in which the first transducer and the second transducer are on opposite sides of a conduit.

7. The method of claim 1 in which the first transducer and the second transducer are clamped on a conduit.

8. The method of claim 1 in which the first transducer and the second transducer are disposed in a conduit in a wetted configuration.

9. The method of claim 1 further comprising the step of adjusting preselected characteristics of the transmitted pulsed signal based upon the calculated signal to noise ratio.

10. The method of claim 1 further including the step of outputting an error message if the signal to noise ratio is below a second predetermined threshold.

11. The method of claim 10 in which the second predetermined threshold is between 0.25 and 1.0.

12. The method of claim 1 in which the step of measuring the amplitude of the pulsed signal includes measuring the maximum amplitude of the pulsed signal.

13. The method of claim 1 in which measuring the amplitude of the noise includes measuring the maximum amplitude of the noise in a predetermined window of time.

14. The method of claim 1 in which the step of measuring the amplitude of the noise includes windowing noise data.

15. The method of claim 14 in which the window directly precedes the pulsed signal.

16. The method of claim 1 in which the amplitude of the pulsed signal is measured before the amplitude of the noise is measured.

17. A system for calculating the transit time of a pulsed signal transmitted through a conduit, the system comprising:

a first transducer which can be coupled to the conduit;

at least second transducer which can be coupled to the conduit;

a controller coupled to the first transducer and the second transducer configured to:

measure the amplitude of the pulsed signal received at the second transducer from the first transducer,

measure the amplitude of noise proximate to the received pulsed signal,

calculate the signal to noise ratio of the received pulsed signal and the noise, respectively,

implement a first technique for calculating the transit time of the received pulsed signal if the signal to noise ratio is above a predetermined threshold, and

implement a second, different technique for calculating the transit time of the received pulsed signal if the signal to noise ratio is less than the predetermined threshold.

18. The system of claim 17 in which the first technique includes a cross correlation technique.

19. The system of claim 17 in which the second technique includes an

integrated threshold technique.

20. The system of claim 17 in which the predetermined threshold is approximately between 7 and 13.

21. The system of claim 17 in which the first transducer and the second transducer are on the same side of the conduit.

22. The system of claim 17 in which the first transducer and the second transducer are on opposite sides of the conduit.

23. The system of claim 17 in which the first transducer and the second transducer are clamped on the conduit.

24. The system of claim 17 in which the first transducer and the second transducer are disposed in the conduit in a wetted configuration.

25. The system of claim 17 in which the controller is further configured to adjust the configuration of the pulsed signal based upon the calculated signal to noise ratio.

26. The system of claim 17 in which the controller is further configured to output an error message if the signal to noise ratio is below a second predetermined

threshold.

27. The system of claim 26 in which the second predetermined threshold is between 0.25 and 1.0.

28. The system of claim 17 in which the controller is further configured to measure the maximum amplitude of the pulsed signal.

29. The system of claim 17 in which the controller is further configured to measure the maximum amplitude of the signal noise in a predetermined window of time.

30. The system of claim 17 in which the step of measuring the amplitude of the noise includes windowing noise data.

31. The system of claim 30 in which the window directly precedes the received pulsed signal.

32. The system of claim 17 in which the amplitude of the pulsed signal is measured before the amplitude of the noise is measured.

33. The system of claim 17 in which the controller includes a transmitter, a receiver, and a processor which accesses a memory and the memory includes computer code which measures the amplitude of the pulsed signal received at the second transducer

from the first transducer, the amplitude of noise proximate to the pulsed signal, and calculates the signal to noise ratio of the pulsed signal and the noise, respectively.

34. A computer program for calculating the transit time of a pulsed signal through a conduit from a first ultrasonic transducer to a second ultrasonic transducer, the program comprising instructions for:

measuring the amplitude of the pulsed signal received at the second transducer from the first transducer,

measuring the amplitude of noise proximate to the received pulsed signal,

calculating the signal to noise ratio of the received pulsed signal and the noise, respectively,

implementing a first technique for calculating the transit time of the received pulsed signal if the signal to noise ratio is above a predetermined threshold, and

implementing a second, different technique for calculating the transit time of the received pulsed signal if the signal to noise ratio is less than the predetermined threshold.